

WHAT IS CLAIMED IS:

1. A printing device connecting with a network, said printing device comprising:

5       a data receiver module that receives a print job, which includes specification of a number of copies to be printed and is transmitted from a device connecting with the network;

10       a printing device specification module that specifies each of other printing devices connecting with the network as an alternative printing device to which the print job is transferable;

15       a job transfer module that, when the specified number of copies to be printed is a plural number, transfers a modified print job, which includes setting of a less number of copies than the specified number as a number of copies to be transferred, to at least part of the specified alternative printing devices for printing; and

20       a copy number management module that manages a total number of copies including a number of copies printed by at least part of the specified alternative printing devices, so as to eventually attain printing of the specified number of copies.

2. A printing device in accordance with claim 1, wherein said job transfer module repeatedly executes the transfer of the modified print job, when there are still multiple copies to be printed.

25       3. A printing device in accordance with claim 2, wherein the specified alternative printing device has a function of spooling a print job therein, and

30       said job transfer module does not retransmit the modified print job to the alternative printing device that spools the modified print job transferred thereto, but transmits an execution instruction

of the modified print job.

4. A printing device in accordance with claim 1, wherein said copy number management module notifies the device, which has  
5 transmitted the print job, of a total number of printed copies including the number of copies printed by at least part of the specified alternative printing devices.

5. A printing device in accordance with claim 1, wherein the  
10 number of copies set in the modified print job is equal to 1.

6. A printing device in accordance with claim 1, wherein said printing device specification module retrieves a printing device on the network that is able to execute printing of the print job received  
15 by said printing device without any conversion and specifies the retrieved printing device as the alternative printing device.

7. A printing device in accordance with claim 1, wherein said printing device specification module specifies a residual operating  
20 life with regard to each of the specified alternative printing devices, and

said job transfer module sets the number of copies to be transferred to each of the specified alternative printing devices, based on the specified residual operating life.

8. A printing device in accordance with claim 7, wherein said job transfer module increases the number of copies to be transferred to the specified alternative printing device that has a longer residual operating life.

9. A printing device in accordance with claim 7, wherein each of the specified alternative printing devices has a preset target time reaching its operating life, and

said job transfer module sets the number of copies to be  
5 transferred to each of the specified alternative printing devices by taking into account the target time.

10. A printing device in accordance with claim 1, wherein said job transfer module transfers the modified printing job with control  
10 information that prohibits further transfer of the modified print job from the specified alternative printing device to another printing device.

11. A printing device in accordance with claim 1, wherein said  
15 printing device specification module retrieves a printing device on the network that has received either of the print job and the modified print job and excludes the retrieved printing device from specification of the alternative printing device.

20 12. A printing device in accordance with claim 1, wherein said job transfer module, when a print job received from another printing device connecting with the network is transferred to the specified alternative printing device, notifies the another printing device, as a sender of the print job, of specification of the alternative printing  
25 device as a transfer destination.

13. A printing device in accordance with claim 1, said printing device further comprising:

a tabulated data transmission module that, when said data  
30 receiver module receives a print job from a device other than a

printing device, generates tabulated data for specifying all printing devices that execute either of the print job and the modified print job, based on a notification from each of the specified alternative printing devices, and transmits the tabulated data to each of the specified  
5 alternative printing devices.

14. A printing device in accordance with claim 1, said printing device further comprising:

a required time evaluation module that evaluates a time  
10 required for execution of the modified print job with regard to each of the other printing devices on the network,

wherein said printing device specification module excludes each of the other printing devices having the required time of not less than a preset level from specification of the alternative printing  
15 device.

15. A printing device in accordance with claim 1, said printing device further comprising:

a printing execution module that executes printing of the  
20 modified print job,

wherein said job transfer module executes the transfer of the modified print job, synchronously with an operation of said printing execution module to read out the modified print job.

25 16. A printing device in accordance with claim 1, wherein said job transfer module comprises:

a divisional transmission sub-module that divides the modified print job into multiple divisional data and transmits the multiple divisional data to the specified alternative printing device;  
30 and

a pointer management sub-module that manages a pointer for identifying a data position where transmission of the modified print job is completed, with regard to each of the specified alternative printing devices.

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17. A printing method that causes a printing device connecting with a network to implement printing, said method comprising the steps of:

receiving a print job, which includes specification of a number of copies to be printed and is transmitted from a device connecting with the network;

specifying each of other printing devices connecting with the network as an alternative printing device to which the print job is transferable;

when the specified number of copies to be printed is a plural number, transferring a modified print job, which includes setting of a less number of copies than the specified number as a number of copies to be transferred, to at least part of the specified alternative printing devices for printing; and

managing a total number of copies including a number of copies printed by at least part of the specified alternative printing devices, so as to eventually attain printing of the specified number of copies.

18. A computer readable recording medium, in which a computer program for controlling a printing device connecting with a network is recorded, said computer program causes a computer incorporated in said printing device to attain the functions of:

receiving a print job, which includes specification of a number of copies to be printed and is transmitted from a device connecting

with the network;

specifying each of other printing devices connecting with the network as an alternative printing device to which the print job is transferable;

5           when the specified number of copies to be printed is a plural number, transferring a modified print job, which includes setting of a less number of copies than the specified number as a number of copies to be transferred, to at least part of the specified alternative printing devices for printing; and

10          managing a total number of copies including a number of copies printed by at least part of the specified alternative printing devices, so as to eventually attain printing of the specified number of copies.

15           19. An output control device that controls each output device connecting with a network, said output control device comprising:

        a data receiver module that receives data to be output from a device connecting with the network;

20          a retrieval module that retrieves each output device on the network;

        a working state detection module that detects a change in working state of each output device, caused by a user's operation of the output device, via the network; and

25          an output device specification module that specifies each output device having the detected changed in working state as a receiver of the data to be output.

        20. An output control device in accordance with claim 19, said output control device comprising:

30          a working state coordination module that coordinates the

working state of each retrieved output device via the network, prior to detection of the change in working state of the output device.

21. An output control device in accordance with claim 19,  
5 wherein said retrieval module retrieves each output device having an address in a specific range that satisfies a predetermined relation to an own address of said output control device.

22. A printing device connecting with a network, said printing  
10 device comprising:

a data receiver module that receives a print job, which includes specification of a number of copies to be printed and is transmitted from a device connecting with the network;

a retrieval module that retrieves each of other printing  
15 devices connecting with the network;

a working state detection module that detects a change in working state of each printing device, caused by a user's operation of the printing device, via the network;

a printing device specification module that specifies each  
20 printing device having the detected changed in working state as an alternative printing device to which the print job is transferable; and

a job transfer module that, when the specified number of copies to be printed is a plural number, transfers a modified print job, which includes setting of a number of copies not greater than the  
25 specified number as a number of copies to be transferred, to at least part of the specified alternative printing devices for printing.

23. A printing device in accordance with claim 22, said printing device further comprising:

30 a working state coordination module that coordinates the

working state of each retrieved printing device via the network, prior to detection of the change in working state of the printing device.

24. A printing device in accordance with claim 22, wherein  
5 said retrieval module retrieves each of the other printing devices having an address in a specific range that satisfies a predetermined relation to an own address of said printing device.

25. A printing device in accordance with claim 22, wherein  
10 said printing device specification module specifies each printing device that has changed from an offline state to an online state by the user's operation, among the other printing devices, as the alternative printing device.

15 26. A printing device in accordance with claim 22, wherein said printing device specification module specifies each printing device that is able to execute printing of the print job received by said printing device without any conversion as the alternative printing device.

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27. A printing device in accordance with claim 22, wherein the number of copies set in the modified print job is obtained by dividing the specified number of copies to be printed by a number of the alternative printing devices plus 1.

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28. A printing device in accordance with claim 22, wherein  
said job transfer module transfers the modified printing job with control information that prohibits further transfer of the modified print job from the specified alternative printing device to another  
30 printing device.



29. A printing device in accordance with claim 22, said printing device further comprising:

5 a copy number management module that manages a total number of copies including a number of copies printed by at least part of the specified alternative printing devices, so as to eventually attain printing of the specified number of copies.

30. A printing device in accordance with claim 29, wherein  
10 said copy number management module notifies the device, which has transmitted the print job, of a total number of printed copies including the number of copies printed by at least part of the specified alternative printing devices.

15 31. A printing device in accordance with claim 22, said printing device further comprising:

a display module that displays information relating to a printing process,

wherein said job transfer module displays information on  
20 identification of the alternative printing device, to which the modified print job has been transferred, on the display module.

32. A control method that controls each output device connecting with a network, said control method comprising the steps  
25 of:

receiving data to be output from a device connecting with the network;

retrieving each output device on the network;

30 detecting a change in working state of each output device, caused by a user's operation of the output device, via the network;

and

specifying each output device having the detected changed in working state as a receiver of the data to be output.

5           33. A printing method that causes a printing device connecting with a network to implement printing, said method comprising the steps of:

receiving a print job, which includes specification of a number of copies to be printed and is transmitted from a device connecting  
10 with the network;

retrieving each of other printing devices connecting with the network;

detecting a change in working state of each printing device, caused by a user's operation of the printing device, via the network;

15 specifying each printing device having the detected changed in working state as an alternative printing device to which the print job is transferable; and

when the specified number of copies to be printed is a plural number, transferring a modified print job, which includes setting of a  
20 number of copies not greater than the specified number as a number of copies to be transferred, to at least part of the specified alternative printing devices for printing.

34. A computer readable recording medium in which a  
25 computer program for controlling each output device connecting with a network is recorded, said computer readable recording medium causing a computer to attain the functions of:

receiving data to be output from a device connecting with the network;

30 retrieving each output device on the network;

detecting a change in working state of each output device,  
caused by a user's operation of the output device, via the network;  
and

specifying each output device having the detected changed in  
5 working state as a receiver of the data to be output.

35. A computer readable recording medium, in which a  
computer program for controlling a printing device connecting with a  
network is recorded, said computer program causes a computer to  
10 attain the functions of:

receiving a print job, which includes specification of a number  
of copies to be printed and is transmitted from a device connecting  
with the network;

retrieving each of other printing devices connecting with the  
15 network;

detecting a change in working state of each printing device,  
caused by a user's operation of the printing device, via the network;

specifying each printing device having the detected changed in  
working state as an alternative printing device to which the print job  
20 is transferable; and

when the specified number of copies to be printed is a plural  
number, transferring a modified print job, which includes setting of a  
number of copies not greater than the specified number as a number  
of copies to be transferred, to at least part of the specified alternative  
25 printing devices for printing.